Toxicodendron diversilobum

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Toxicodendron diversilobum (syn. *Rhus diversiloba*), commonly named **Pacific poison oak**[1] or **western poison oak**, is a woody vine or shrub in the Anacardiaceae (sumac) family. It is widely distributed in western North America, inhabiting conifer and mixed broadleaf forests, woodlands, grasslands, and chaparral biomes.[2] Like other members of the *Toxicodendron* genus, *T. diversilobum* causes itching and allergic rashes in many humans after contact by touch or smoke inhalation.

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Distribution

Toxicodendron diversilobum is found in California (also the original name of Los Angeles; Yangna or Iyaanga/poison oak place),[3] the Baja California Peninsula, Nevada, Oregon, Washington, and British Columbia.[4] The related *T. pubescens* (eastern poison oak) is native to the Southeastern United States. *T. diversilobum* and *T. rydbergii* (western poison ivy) hybridize in the Columbia River Gorge area.[5]

Toxicodendron diversilobum is common in various habitats, from mesic riparian zones to xeric chaparral.[6] It thrives in shady and dappled light through full and direct sunlight conditions, at elevations below 5,000 feet (1,500 m).[5] The vining form can climb up large shrub and tree trunks into their canopies. Sometimes it kills the support plant by smothering or breaking it.[5] The plant often occurs in chaparral and woodlands, coastal sage scrub, grasslands, and oak woodlands; and Douglas-fir (*Pseudotsuga menzesii*), hemlock–Sitka spruce, *Sequoia*

Toxicodendron diversilobum

Pacific poison oak

Pacific poison oak (larger leaves) at base of an oak tree

Scientific classification

Kingdom:	Plantae
(unranked):	Angiosperms
(unranked):	Eudicots
(unranked):	Rosids
Order:	Sapindales
Family:	Anacardiaceae
Genus:	*Toxicodendron*
Species:	***T. diversilobum***

Binomial name

Toxicodendron diversilobum

(Torr. & A.Gray) Greene

Synonyms

Rhus diversiloba Torr. & A.Gray

sempervirens (coast redwood), *Pinus ponderosa* (Ponderosa pine), and mixed evergreen forests.[7]

Description

Toxicodendron diversilobum is extremely variable in growth habit and leaf appearance. It grows as a dense 0.5–4 m (1.6–13.1 ft) tall shrub in open sunlight, a treelike vine 10–30 feet (3.0–9.1 m) and may be more than 100 feet (30 m) long with an 8–20 cm (3.1–7.9 in) trunk, as dense thickets in shaded areas, or any form in between [5][8] It reproduces by spreading rhizomes and by seeds.[2]

The plant is winter deciduous, so that after cold weather sets in, the stems are leafless and bear only the occasional cluster of berries. Without leaves the stems may sometimes be identified by occasional black marks where its milky sap may have oozed and dried.

T. diversilobum foliage

The leaves are divided into three (rarely 5, 7, or 9) leaflets, 3.5 to 10 centimetres (1.4 to 3.9 in) long, with scalloped, toothed, or lobed edges.[6] They generally resemble the lobed leaves of a true oak, though tend to be more glossy. Leaves are typically bronze when first unfolding in February to March, bright green in the spring, yellow-green to reddish in the summer, and bright red or pink from late July to October.[5]

White flowers form in the spring, from March to June.[5] If they are fertilized, they develop into greenish-white or tan berries.[6]

Botanist John Howell observed that the toxicity of *T. diversilobum* obscures its merits:

> "In spring, the ivory flowers bloom on the sunny hill or in sheltered glade, in summer its fine green leaves contrast refreshingly with dried and tawny grassland, in autumn its colors flame more brilliantly than in any other native, but one great fault, its poisonous juice, nullifies its every other virtue and renders this beautiful shrub the most disparaged of all within our region."[9]

Toxin qualities

Toxicodendron diversilobum leaves and twigs have a surface oil, urushiol, which causes an allergic reaction.[2] It causes contact dermatitis – an immune-mediated skin inflammation – in four-fifths of humans.[10][11] However, most, if not all, will become sensitized over time with repeated or more concentrated exposure to urushiol.

The active components of urushiol have been determined to be unsaturated congeners of 3-heptadecylcatechol with up to three double bonds in an unbranched C17 side chain.[12] In poison ivy, these components are unique in that they contain a -CH2CH2- group in an unbranched alkyl side chain.[13]

Reactions

Toxicodendron diversilobum skin contact first causes itching; then evolves into dermatitis with inflammation, colorless bumps, severe itching, and blistering.[14] In the dormant deciduous seasons the plant can be difficult

to recognize, however leafless branches and twigs contact also causes allergic reactions.

Urushiol volatilizes when burned, and human exposure to *T. diversilobum* smoke is extremely hazardous, from wildfires, controlled burns, or disposal fires.[5] The smoke can poison people who thought they were immune.[5] Branches used to toast food over campfires can cause reactions internally and externally.

Urushiol is also found in the skin of mangos, posing a danger to people already sensitized to *T. diversilobum* when eating the fruit while it is still in the rind.[15][16]

Urushiol-induced contact dermatitis from poison oak

Ecology

Black-tailed deer, mule deer, California ground squirrels, western gray squirrels, and other indigenous fauna feed on the leaves of the plant.[5] It is rich in phosphorus, calcium, and sulfur.[5] Bird species use the berries for food, and utilize the plant structure for shelter.[5] Neither native animals, nor horses, livestock, or canine pets demonstrate reactions to urushiol.[2]

Due to human allergic reactions, *T. diversilobum* is usually eradicated from gardens and public landscaped areas. It can be a weed in agricultural fields, orchards, and vineyards.[17] It is usually removed by pruning, herbicides, digging out, or a combination.[18]

Uses

Medicinal

Californian Native Americans used the plant's stems and shoots to make baskets, the sap to cure ringworm, and as a poultice of fresh leaves applied to rattlesnake bites.[19] The juice or soot was used as a black dye for sedge basket elements, tattoos, and skin darkening.[19][20]

An infusion of dried roots, or buds eaten in the spring, were taken by some native peoples for an immunity from the plant poisons.[19]

Chumash peoples used *T. diversilobum* sap to remove warts, corns, and calluses; to cauterize sores; and to stop bleeding.[19] They drank a decoction made from the roots to treat dysentery.[21]

Cultivation

Toxicodendron diversilobum can be a carefully situated component in wildlife gardens, habitat gardens, and natural landscaping.

The plant is used in habitat restoration projects.[5] It can be early stage succession where woodlands have been burned or removed, serving as a nurse plant for other species.

See also

- *Toxicodendron pubescens* – Eastern poison oak
- *Toxicodendron vernix* – Poison sumac
- *Toxicodendron radicans* – Eastern poison ivy
- *Toxicodendron rydbergii* – Western poison ivy

References

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Gallery

Red phase in spring

Green phase, and flowers

Berries

Summer–autumn turning color phase

Shrub form

Vine form

External links

- U.S. Forest Service information: *Toxicodendron diversilobum* (Pacific poison oak) (http://www.fs.fed.us/database/feis/plants/vine/toxdiv/all.html)
- Calflora Database: *Toxicodendron diversilobum* (Pacific poison oak) (http://www.calflora.org/cgi-bin/species_query.cgi?where-taxon=Toxicodendron+diversilobum)
- Jepson Flora Project: *Toxicodendron diversilobum* (http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=46791)
- American Academy of Dermatology – Poison Oak information (http://www.aad.org/public/Publications/pamphlets/Poison_IvyOakSumac.htm)
- Western Poison-Oak Photo Gallery (http://www.hanskellner.com/photos/2004/05/PoisonOak/)
- All about Western poison oak (T. Diversilobum) (http://poison-ivy-oak-sumac.com/the-poison-oaks/western-poison-oak/)
- *Toxicodendron diversilobum* – U.C. Photo gallery (http://calphotos.berkeley.edu/cgi/img_query?where-taxon=Toxicodendron+diversilobum)

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Plants described in 1838 | Taxa named by Asa Gray | Taxa named by John Torrey
Taxa named by Edward Lee Greene

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